Product sheet

786-O Cells | 300107

General information

Description	786-O cells are a human renal cell carcinoma cell line derived from a primary clear cell adenocarcinoma of the kidney. This cell line is frequently used in the study of renal cell carcinoma (RCC), providing valuable insights into the biological characteristics and treatment responses of this cancer type. The 786-O cell line exhibits a clear cell morphology, typical of the most common form of kidney cancer, and is characterized by specific genetic alterations, including the loss of the von Hippel-Lindau (VHL) tumor suppressor gene. This genetic feature is significant as it plays a crucial role in the pathogenesis of many clear cell renal carcinomas by influencing hypoxia-inducible pathways, which are central to cellular responses to low oxygen conditions. These cells are particularly useful for studying the molecular mechanisms involved in tumor growth and survival, including pathways related to angiogenesis, metabolism, and cell cycle regulation. Due to their VHL deficiency, 786-O cells are an excellent model for researching the effects of hypoxia and for testing drugs that target hypoxia-related pathways. In addition to their application in basic cancer research, 786-O cells are also used in preclinical studies to evaluate the efficacy of new therapeutic agents, especially those targeting the angiogenic processes driven by the overexpression of hypoxia-inducible factors (HIFs). This includes therapies that inhibit the HIF pathway, tyrosine kinase inhibitors, and immune checkpoint inhibitors. Overall, 786-O cells provide a robust model for advancing our understanding of the molecular underpinnings of renal cell carcinoma and for developing targeted therapies that could improve treatment outcomes for patients with this challenging disease.
Organism	Human
Tissue	Kidney
Disease	Renal cell carcinoma
Metastatic site	Primary tumor site (kidney)
Applications	Renal cell carcinoma research; VHL pathway and HIF biology; anti-angiogenic drug evaluation; tyrosine kinase inhibitor testing; transfection host; clear cell RCC xenograft models
Synonyms	786-o, 786O, 786-0, 786.O, 786-O RCC, RCC 786-O, RCC_7860, RCC 7860, 7860, 786-0WT

Characteristics

Age	58 years
Gender	Male

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Ethnicity	Caucasian
Morphology	Epithelial-like
Cell type	Epithelial cells
Growth properties	Adherent

Regulatory Data

Citation	786-0 (Cytion catalog number 300107)
Biosafety level	1
NCBI_TaxID	9606
CellosaurusAccession	CVCL_1051
GMO Status	No genetic modification; wildtype clear cell RCC line with endogenous VHL loss-of-function

Biomolecular Data

Antigen expression	CAIx +, as confirmed by FACS analysis.
Tumorigenic	In immunosuppressed hamsters
Products	The cells produce a PTH (parathyroid hormone) like peptide that is identical to peptides produced by breast and lung tumors. It has an N terminal sequence similar to PTH, has PTH like activity, and has a molecular weight of 6000 daltons.
Ploidy status	Hypertriploid. Y chromosome was observed in 60% of the cells analyzed.
Karyotype	Hypertriploid. Y was present in 60% of cells examined

Handling

Culture Medium	RPMI 1640, w: 2.0 mM stable Glutamine, w: 2.0 g/L NaHCO3 (Cytion article number 820700a)

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Supplements	Supplement the medium with 10% FBS
Dissociation Reagent	Accutase
Doubling time	24 hours
Subculturing	Remove the old medium from the adherent cells and wash them with PBS that lacks calcium and magnesium. For T25 flasks, use 3-5 ml of PBS, and for T75 flasks, use 5-10 ml. Then, cover the cells completely with Accutase, using 1-2 ml for T25 flasks and 2.5 ml for T75 flasks. Let the cells incubate at room temperature for 8-10 minutes to detach them. After incubation, gently mix the cells with 10 ml of medium to resuspend them, then centrifuge at 300xg for 3 minutes. Discard the supernatant, resuspend the cells in fresh medium, and transfer them into new flasks that already contain fresh medium.
Split ratio	1 to 5
Seeding density	1 x 10^4 cells/cm^2 will result in a confluent monolayer within 4 days.
Fluid renewal	2 to 3 times per week
Post-Thaw Recovery	After thawing, plate the cells at 4 x 10^4 cells/cm^2 and allow the cells to recover from the freezing process and to adhere for at least 48 hours.
Freeze medium	As a cryopreservation medium, we use complete growth medium (including FBS) + 10% DMSO for adequate post-thaw viability, or CM-1 (Cytion catalog number 800100), which includes optimized osmoprotectants and metabolic stabilizers to enhance recovery and reduce cryo-induced stress.

Thawing and Culturing Cells	1. Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit. 2. Upon receipt, either store the cryovial immediately at temperatures below -150°C to ensure the preservation of cellular integrity, or proceed to step 3 if immediate culturing is required. 3. For immediate culturing, swiftly thaw the vial by immersing it in a 37°C water bath with clean water and an antimicrobial agent, agitating gently for 40-60 seconds until a small ice clump remains. 4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening. 5. Carefully open the disinfected vial and transfer the cell suspension into a 15 ml centrifuge tube containing 8 ml of room-temperature culture medium, mixing gently. 6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium. 7. Gently resuspend the cell pellet in 10 ml of fresh culture medium. For adherent cells, divide the suspension between two T25 culture flasks; for suspension cultures, transfer all the medium into one T25 flask to promote effective cell interaction and growth. 8. Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.
Incubation Atmosphere	37°C, 5% CO_2, humidified atmosphere.
Shipping Conditions	Cryopreserved cell lines are shipped on dry ice in validated, insulated packaging with sufficient refrigerant to maintain approximately −78 °C throughout transit. On receipt, inspect the container immediately and transfer vials without delay to appropriate storage.
Storage Conditions	For long-term preservation, place vials in vapor-phase liquid nitrogen at about −150 to −196 °C. Storage at −80 °C is acceptable only as a short interim step before transfer to liquid nitrogen.

Quality Control & Molecular Analysis

Sterility

Mycoplasma contamination is excluded using both PCR-based assays and luminescence-based mycoplasma detection methods.

To ensure there is no bacterial, fungal, or yeast contamination, cell cultures are subjected to daily visual inspections.